

FILEID**OTSCVTIL

I 9

000000 TTTTTTTTTT SSSSSSSS CCCCCCCC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
000000 TTTTTTTTTT SSSSSSSS CCCCCCCC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
00 00 TT SS CC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
00 00 TT SS CC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
00 00 TT SS CC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
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000000 TT SSSSSSSS CCCCCCCC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
000000 TT SSSSSSSS CCCCCCCC VV VV TTTTTTTTTT TTTTTTTTTT IIIIIII LL
LL IIIIIII SSSSSSSS
LL IIIIIII SSSSSSSS
LL II SS SS
LLL LLLL LLLL IIIIIII SSSSSSSS
LLL LLLL LLLL IIIIIII SSSSSSSS

(2)	53	HISTORY	: Detailed Current Edit History
(3)	71	DECLARATIONS	
(4)	106	OTSSCVT_TU_L	: convert text (unsigned) to longword
(5)	176	OTSSCVT_TI_L	: convert text (integer) to longword

```
0000 1 .TITLE OT$CVTIL      ; Convert text (integer) to longword
0000 2 .IDENT /1-009/       ; File: OTSCVTIL.MAR Edit: SBL1009
0000 3
0000 4
0000 5 ****
0000 6
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0000 24
0000 25
0000 26 ****
0000 27
0000 28
0000 29
0000 30 : FACILITY: Language independent support library
0000 31 ++
0000 32 : ABSTRACT:
0000 33
0000 34 : OTSSCVT_TIL converts a text representation of a decimal value to
0000 35 : an internal binary form. It replaces FORSCNV_IN_I.
0000 36
0000 37 : OTSSCVT_TUL converts a text representation of an unsigned decimal value
0000 38 : to internal binary form.
0000 39 --
0000 40
0000 41 : VERSION: 1
0000 42
0000 43 : HISTORY:
0000 44
0000 45 : AUTHOR:
0000 46 : Steven B. Lionel, 21-Feb-1979: Version 1
0000 47
0000 48 : MODIFIED BY:
0000 49
0000 50
0000 51
```

```
0000 53 .SBTTL HISTORY : Detailed Current Edit History
0000 54
0000 55
0000 56 : Edit History for Version 1 of OTSSCVT_TI_L
0000 57
0000 58 : 1-001 - Adapted from FOR$CNV IN I version 1-009. SBL 21-Feb-79
0000 59 : 1-002 - Added V_SKIPTABS. SBL T1-JUL-1979
0000 60 : 1-003 - Fix bug in overflow test. SBL 12-July-1979
0000 61 : 1-004 - Make V_SKIPTABS bit 4 to conform with floating. SBL 30-Aug-1979
0000 62 : 1-005 - Fix bug in tab skipping. Add standard module headers.
0000 63 : SBL 11-Sept-1979
0000 64 : 1-006 - Do correct thing if value size is incorrect. SBL 25-Feb-1980
0000 65 : 1-007 - REALLY do correct thing if value size is incorrect. Previous code
0000 66 : went into infinite loop. SBL 5-Jan-1981
0000 67 : 1-008 - Give error if character value greater than 127 found.
0000 68 : SPR 11-52485 SBL 29-Dec-1982
0000 69 : 1-009 - Add OTSSCVT_TU_L. SBL 27-Apr-1983
```

0000 7 .SBttl DECLARATIONS
0000 72 :
0000 73 : INCLUDE FILES:
0000 74 :
0000 75 :
0000 76 :
0000 77 : EXTERNAL SYMBOLS:
0000 78 :
0000 79 : DSABL GBL
0000 80 : EXTRN OTSS_INPICONERR
0000 81 :
0000 82 :
0000 83 : MACROS:
0000 84 :
0000 85 :
0000 86 :
0000 87 : PSECT DECLARATIONS:
0000 88 :
0000 89 : PSECT _OTSSCODE PIC, SHR, LONG, EXE, NOWRT
0000 90 :
0000 91 :
0000 92 :
0000 93 : EQUATED SYMBOLS:
0000 94 :
0000 95 :
0000 96 :
0000007C 97 : REGMASK = ^M<R2, R3, R4, R5, R6>
0000001F 98 : V_NEGATIVE = 31 ; 31th bit position of flag register
0000001E 99 : V_UNSIGNED = 30 ; indicates OTSSCVT_TU_L
0000 100 :
0000 101 :
0000 102 : OWN STORAGE:
0000 103 :
0000 104 :

```

0000 106 .SBTTL OTSSCVT_TU_L : convert text (unsigned) to longword
0000 107
0000 108 :+
0000 109
0000 110 : FUNCTIONAL DESCRIPTION:
0000 111
0000 112 OTSSCVT_TU_L converts an ASCII string containing a text
0000 113 representation of an unsigned decimal number to internal binary form.
0000 114
0000 115
0000 116 The text representation converted is:
0000 117 <0 or more blanks>
0000 118 <0 or more ASCII digits from "0" through "9">
0000 119 <end of string>
0000 120
0000 121 Notes:
0000 122 1. If caller flag V_SKIPBLANKS is clear, then spaces are
0000 123 equivalent to "0". If set, spaces are ignored.
0000 124 2. If caller flag V_SKIPTABS is clear, then tab characters
0000 125 are illegal. If set, tabs are ignored.
0000 126
0000 127 : CALLING SEQUENCE:
0000 128
0000 129 status.wlc.v = OTSSCVT_TU_L (in_str.rt.dx_value.wx.r
0000 130 [, value_size.rl.v [, caller_flags.rlu.v]])
0000 131
0000 132 : INPUT PARAMETERS:
0000 133
00000004 134 in_str = 4 : Input string by descriptor
0000000C 135 value_size = 12 : Size of value in bytes
000000010 136 : Must be 1, 2 or 4.
00000000 137 caller_flags = 16 : Caller flags by value
00000000 138 V_SKIPBLANKS = 0 : If set, blanks are ignored.
00000000 139 : Else they are treated as
00000004 140 V_SKIPTABS = 4 : zeroes.
00000004 141 : If set, tabs are ignored.
00000004 142 : Else they are invalid.
00000004 143
00000008 144 : IMPLICIT INPUTS:
00000008 145 NONE
00000008 146
00000008 147 : OUTPUT PARAMETERS:
00000008 148 value = 8 : Output value by reference
00000008 149
00000008 150
00000008 151 : IMPLICIT OUTPUTS:
00000008 152 NONE
00000008 153
00000008 154
00000008 155
00000008 156 : COMPLETION CODES:
00000008 157
00000008 158 SSS_NORMAL - Successful completion
00000008 159 OTSS_INPCONERR - There was an invalid character in the input
00000008 160 string. the value overflowed the range allowed,
00000008 161 or value_size was invalid. The result "value" is
00000008 162 set to zero, unless value_size is invalid, in which

```

0000 163 : case "value" is unpredictable.

0000 164 :

0000 165 : SIDE EFFECTS:

0000 166 :

0000 167 : NONE

0000 168 :

0000 169 :--

0000 170 :

04 56 56 007C 0000 171 .ENTRY OTSSCVT_TU_L, REGMASK
1E D4 0002 172 CLR R6
0004 173 BBCS #V_UNSIGNED, R6, COMMON_ENTRY ; Clear flags mask
0008 174 COMMON_CODE

```

0008 176 .SBTTL OTSSCVT_TI_L ; convert text (integer) to longword
0008 177
0008 178 ++
0008 179
0008 180 FUNCTIONAL DESCRIPTION:
0008 181
0008 182 OTSSCVT_TI_L converts an ASCII string containing a text
0008 183 representation of a decimal number to internal binary form.
0008 184
0008 185 This routine supports FORTRAN I input format conversion as well
0008 186 as similar types for other languages.
0008 187
0008 188 The text representation converted is:
0008 189 <0 or more blanks>
0008 190 <"+", "-" or nothing>
0008 191 <0 or more ASCII digits from "0" through "9">
0008 192 <end of string>
0008 193
0008 194 Notes:
0008 195 1. If caller flag V_SKIPBLANKS is clear, then spaces are
0008 196 equivalent to "0". If set, spaces are ignored.
0008 197 2. If caller flag V_SKIPTABS is clear, then tab characters
0008 198 are illegal. If set, tabs are ignored.
0008 199
0008 200 CALLING SEQUENCE:
0008 201
0008 202 status.wlc.v = OTSSCVT_TI_L (in.str.rt.dx, value.wx.r
0008 203 [, value_size.rt.v [, caller_flags.rlu.v]])
0008 204
0008 205 INPUT PARAMETERS:
0008 206
00000004 207 in_str = 4 ; Input string by descriptor
0000000C 208 value_size = 12 ; Size of value in bytes
00000008 209 ; Must be 1, 2 or 4.
00000010 210 caller_flags = 16 ; Caller flags by value
00000000 211 V_SKIPBLANKS = 0 ; If set, blanks are ignored.
00000004 212 ; Else they are treated as
00000004 213 ; zeroes.
00000004 214 V_SKIPTABS = 4 ; If set, tabs are ignored.
00000004 215 ; Else they are invalid.
00000004 216
00000008 217 IMPLICIT INPUTS:
00000008 218 NONE
00000008 219
00000008 220 OUTPUT PARAMETERS:
00000008 221
00000008 222 value = 8 ; Output value by reference
00000008 223
00000008 224
00000008 225 IMPLICIT OUTPUTS:
00000008 226 NONE
00000008 227
00000008 228 COMPLETION CODES:
00000008 229
00000008 230 SSS_NORMAL - Successful completion
00000008 231 OTSS_INPCONERR - There was an invalid character in the input
00000008 232

```

0008 233 :
 0008 234 :
 0008 235 :
 0008 236 :
 0008 237 :
 0008 238 : SIDE EFFECTS:
 0008 239 :
 0008 240 : NONE
 0008 241 :
 0008 242 :--
 0008 243 :
 0008 244 FOR\$CNV_IN_I:: : For compatibility
 007C 0008 245 .ENTRY OTSSCVT_TI_L, REGMASK
 56 D4 000A 246 CLRL R6 ; clear flags
 50 04 BC 7D 000C 247 COMMON_ENTRY: MOVQ @in_str(AP), R0 ; R0 = width of the input string
 04 6C 91 0010 248 0010 CLRQ R4 ; R1 = address of the input string
 04 04 19 0012 249 CMPB (AP), #<caller_flags/4> ; R4/R5 = ACC = 0
 56 10 AC 90 0015 250 BLSS 5\$; Optional argument present?
 0017 251 0015 252 MOVB caller_flags(AP), R6 ; No
 0018 253 0018 254 ; Yes, move it
 0018 255 :+
 0018 256 : Find the first non-blank character. Process the sign, if present,
 0018 257 : and if we are not doing unsigned conversion.
 0018 258 :
 61 50 20 38 0018 259 :-
 001F 260 0018 261 5\$: SKPC #^A/ /, R0, (R1) ; skip blanks
 001F 262 001F 263 ; R0 = #CHAR REMAINING
 001F 264 001F 265 ; R1 = POINTER_TO_INPUT
 08 56 61 13 001F 266 BEQL DONE ; Z bit is set if R0 = 0
 09 04 E1 0021 267 BBC #V_SKIPTABS, R6, 7\$; branch to DONE if no non-blank
 09 61 91 0025 268 CMPB (RT), #^X09 ; Ignoring tabs?
 06 12 0028 269 BNEQ ?\$; Yes, is it a tab?
 51 D6 002A 270 INCL R1 ; If not, continue
 50 D7 002C 271 DECL RO ; Bump pointer
 EB 11 002E 272 BRB 5\$; Decrement counter
 12 56 1E E0 0030 273 7\$: BBS #V_UNSIGNED, R6, DIGIT_LOOP ; Look for more.
 2D 61 91 0034 274 CMPB (RT), #^A/-/ ; If unsigned, skip sign test
 04 12 0037 275 BNEQ 10\$; is the current char a "-" sign?
 05 56 1F E3 0039 276 BBCS #V_NEGATIVE, R6, DECIMAL ; no, branch to 10\$
 003D 277 ; set negative flag and continue
 2B 61 91 003D 278 10\$: CMPB (R1), #^A/+/ ; is current char a "+" sign?
 04 12 0040 279 BNEQ DIGIT_LOOP ; no, branch to check if it is a digit
 0042 280 0042 281 ;+
 0042 282 : skip over "-" or "+" sign
 0042 283 :-
 0042 284 0042 285 DECIMAL:
 50 D7 0042 286 DECL R0 ; R0 = #CHAR REMAINING
 51 D6 0044 287 INCL R1 ; R1 = POINTER_TO_INPUT

0046 290 :+
 0046 291 : Loop to collect digits, treat blanks as zeroes, until the string is exhausted
 0046 292 : then branch to DONE
 0046 293 :-
 0046 294
 0046 295 DIGIT_LOOP:
 50 D7 0046 296 DECL R0 : R0 = #CHAR REMAINING
 38 19 0048 297 BLSS DONE : branch to DONE if the string is exhausted
 004A 298
 004A 299 :+
 004A 300 : Get next character, converting blanks into zeroes unless V_SKIPBLANKS set.
 004A 301 :-
 004A 302
 53 81 9A 004A 303 MOVZBL (R1)+, R3 : get current char and adjust POINTER_TO_INP
 20 53 91 004D 304 CMPB R3, #^A/ / : compare char with blank
 08 13 0050 305 BEQL 10\$: possibly ignore or set to 0
 OE 56 04 E1 0052 306 BBC #V_SKIPTABS, R6, CHECK_DIGIT ; not ignoring tabs?
 09 53 91 0056 307 CMPB R3, #^X09 : Tab?
 EB 13 0059 308 BEQL DIGIT_LOOP : Yes, ignore it
 07 11 005B 309 BRB CHECK_DIGIT : Continue
 ES 56 00 E0 005D 310 10\$: BBS #V_SKIPBLANKS, R6, DIGIT_LOOP ; ignore if V_SKIPBLANKS set
 53 30 DD C061 311 MOVL #^A/0/, R3 ; convert blank into zero
 0064 312
 0064 313 :+
 0064 314 : Check if current char is a legal digit, accumulate it in ACC if yes and
 0064 315 : then branch to DIGIT_LOOP if no overflow. Otherwise fall into ERROR.
 0064 316 :-
 0064 317
 0064 318 CHECK_DIGIT:
 53 30 C2 0064 319 SUBL #^A/0/, R3 : R3 = ASCII(current_char) - ASCII('0')
 0E 19 0067 320 BLSS ERROR : Error if less than '0'
 09 53 D1 0069 321 CMPL R3, #9 : Is it greater than '9'?
 54 53 54 0A 7A 006C 322 BGTR ERROR : If so, error
 09 14 006C 323 EMUL #10, R4, R3, R4 : #10 = radix
 0073 324
 0073 325
 0073 326
 0073 327 TSTL R5 : R4/R5 = ACC * radix + current_digit
 55 D5 0073 328 : compare R5 with 0, since a non-zero value
 0075 329 : in HP(ACC) means overflow
 CF 13 0075 330 BEQL DIGIT_LOOP : if no overflow branch back to get more
 0077 331 character. Otherwise fall into ERROR

```

      0077 333 :+
      0077 334 : ERROR return
      0077 335 :-
      0077 336
      50 00000000'8F D0 0077 337 ERROR: MOVL #OTSS_INPCONERR, R0 ; R0 = error return code
      54 D4 007E 338 CLRL R4
      21 11 0080 339 BRB EXIT ; zero result
      0082 340
      0082 341 :+
      0082 342 : DONE
      0082 343 :-
      0082 344
      50 01 D0 0082 345 DONE: MOVL #1, R0 ; return function value of SSS_NORMAL
      12 56 1F E1 0085 346 BBC #V_NEGATIVE, R6, 10$ branch if "-" wasn't seen
      80000000 8F 54 D1 0089 347 CMPL R4-#X80000000 is it 2**31?
      11 13 0090 348 BEQL EXIT yes, already correct!
      54 D5 0092 349 TSTL R4 test for overflow
      E1 19 0094 350 BLSS ERROR if already negative, overflow
      54 CE 0096 351 MNEGL R4, R4 answer is -R4
      08 11 0099 352 BRB EXIT Store result
      04 56 1E E0 0098 353 10$: BBS #V_UNSIGNED, R6, EXIT Skip overflow test if unsigned
      54 D5 009F 354 TSTL R4 Overflow?
      03 6C 91 00A1 355 BLSS ERROR If negative, yes
      52 OC AC 00A8 356 EXIT: CMPB (AP), #<value_size/4> Is arg present?
      22 19 00A6 357 BLSS 40$ If not, assume longword
      1C 13 00AC 358 MOVL value_size(AP), R2 Get value size in R2
      04 52 D1 00AE 359 BEQL 40$ If zero, assume 4
      17 13 00B1 360 CMPL R2 #4 Is it a longword?
      02 52 D1 00B3 361 BEQL 40$ Yes
      0A 13 00B6 362 CMPL R2 #2 Word?
      15 1A 00B8 363 BEQL 20$ Yes
      08 BC 54 F6 00BA 364 BGTRU BADSIZE Byte if LSS, bad otherwise
      B7 1D 00BE 365 CVTLB R4, avalue(AP) Convert byte
      0C 11 00C0 366 BVS ERROR Overflow?
      08 BC 54 F7 00C2 368 20$: CVTLW R4, avalue(AP) No, exit
      AF 1D 00C6 369 BVS ERROR Convert to word
      04 11 00C8 370 BRB 50$ Overflow?
      08 BC 54 D0 00CA 371 40$: MOVL R4, avalue(AP) No, exit
      04 00CE 372 50$: RET ; Move longword

      00CF 373
      00CF 374 :+
      00CF 375 : Come here when value_size is incorrect.
      00CF 376 :-
      00CF 377
      00CF 378 BADSIZE:
      50 00000000'8F D0 00CF 379 MOVL #OTSS_INPCONERR, R0 ; Input conversion error
      04 00D6 380 RET
      00D7 381
      00D7 382 .END

```

OT\$CVTIL
Symbol table

G 10
: Convert text (integer) to longword

16-SEP-1984 00:29:53 VAX/VMS Macro V04-00
6-SEP-1984 11:13:46 [LIBRTL.SRC]OT\$CVTIL.MAR;1 Page 10
(7)

BADSIZE = 0000000CF R 01
CALLER FLAGS = 000000010 R 01
CHECK DIGIT = 000000064 R 01
COMMON ENTRY = 00000000C R 01
DECIMAC = 000000042 R 01
DIGIT_LOOP = 000000046 R 01
DONE = 000000082 R 01
ERROR = 000000077 R 01
EXIT = 0000000A3 R 01
FOR\$CNV_IN_I = 000000008 RG 01
IN STR = 000000004 R 01
OT\$CVT-TI-L = 000000008 RG 01
OT\$CVT-TU-L = 000000000 RG 01
OT\$ INP\$CONERR = ***** X 00
REGMASK = 0000007C
VALUE = 000000008
VALUE_SIZE = 00000000C
V_NEGATIVE = 00000001F
V_SKIPBLANKS = 000000000
V_SKIPTABS = 000000004
V_UNSIGNED = 00000001E

+-----+
! Psect synopsis !
+-----+

PSECT name	Allocation	PSECT No.	Attributes	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE
. ABS	000000000	(0.)	00 (0.)	NOPIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT
_OT\$CODE	000000D7	(215.)	01 (1.)	PIC	USR	CON		LCL				NOVEC LONG

+-----+
! Performance indicators !
+-----+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	30	00:00:00.04	00:00:02.60
Command processing	107	00:00:00.32	00:00:02.57
Pass 1	75	00:00:00.52	00:00:02.71
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	74	00:00:00.46	00:00:02.43
Symbol table output	4	00:00:00.02	00:00:00.02
Psect synopsis output	2	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	294	00:00:01.38	00:00:10.35

The working set limit was 1050 pages.

5207 bytes (11 pages) of virtual memory were used to buffer the intermediate code.

There were 10 pages of symbol table space allocated to hold 21 non-local and 8 local symbols.

382 source lines were read in Pass 1, producing 14 object records in Pass 2.

0 pages of virtual memory were used to define 0 macros.

OTSSCVTIL H 10
VAX-11 Macro Run Statistics : Convert text (integer) to longword 16-SEP-1984 00:29:53 VAX/VMS Macro V04-00
6-SEP-1984 11:13:46 [LIBRTL.SRC]OTSCVTIL.MAR;1 Page 11 (7)

! Macro library statistics !

Macro library name

\$255\$DUA28:[SYSLIB]STARLET.MLB;2

Macros defined

0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:OTSCVTIL/OBJ=OBJ\$:OTSCVTIL MSRC\$:OTSCVTIL/UPDATE=(ENHS:OTSCVTIL)

0212 AH-BT13A-SE
VAX/VMS V4.0

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